CLAIMS

1-14. (canceled)

15. (new) A fuse apparatus for igniting an explosive charge of an ordnance, the fuse apparatus comprising:

a laser adapted to generate a laser optical signal for igniting the explosive charge;

an electrically controlled mechanical switch comprising a base, an actuator connected to the base, and an actively controlled movable element adapted to move relative to the base as a function of an electrical control signal applied to the actuator, wherein the mechanical switch is adapted to be configured in:

a first switch configuration in which at least one of position and orientation of the movable element is controlled by the actuator to directly prevent the laser optical signal from impinging on the explosive charge; and

a second switch configuration in which at least one of the position and the orientation of the movable element is controlled by the actuator to directly enable the laser optical signal to impinge on the explosive charge; and

a control unit adapted to generate and transmit the electrical control signal to the actuator to change the configuration of the mechanical switch from the first switch configuration to the second switch configuration.

16. (new) The fuse apparatus of claim 15, wherein:

the movable element of the mechanical switch is a shutter adapted to (1) block the laser optical signal to prevent the laser optical signal from impinging on the explosive charge in the first switch configuration and (2) unblock the laser optical signal to enable the laser optical signal to impinge on the explosive charge in the second switch configuration; and

the actuator is adapted to change the position of the shutter from the first switch configuration to the second configuration based on the electrical control signal from the control unit.

17. (new) The fuse apparatus of claim 15, wherein:

the laser has a controllable optical power level; and

the control unit is further adapted to control the optical power level of the laser to generate either a low-power laser optical signal or a high-power laser optical signal, wherein:

the low-power laser optical signal is insufficient to ignite the explosive charge; and

the high-power laser optical signal is sufficient to ignite the explosive charge.

18. (new) The fuse apparatus of claim 17, further comprising an optical detector positioned such that:

the optical detector receives at least a portion of the laser optical signal reflected from the movable element of the mechanical switch, if the mechanical switch is in the first switch configuration; and

the detector receives substantially no reflected laser optical signal from the movable element of the mechanical switch, if the mechanical switch is in the second switch configuration, wherein the optical detector is adapted to generate a detector signal for the control unit indicative of receipt of reflected laser optical signal.

19. (new) The fuse apparatus of claim 18, wherein the control unit is further adapted to control the laser to generate:

the low-power laser optical signal if the detector signal indicates receipt of the reflected laser optical signal; and

the high-power laser optical signal if the detector signal indicates non-receipt of the reflected laser optical signal.

20. (new) The fuse apparatus of claim 15, wherein the control unit is adapted to:

detect firing of the ordnance; and

control the configuration of the mechanical switch to change from the first configuration to the second configuration after detecting the firing of the ordnance.

21. (new) The fuse apparatus of claim 20, further comprising an accelerometer adapted to generate an acceleration signal for the control unit indicative of the firing of the ordnance.

22. (new) The fuse apparatus of claim 20, further comprising a spin sensor adapted to generate a spin signal for the control unit indicative of the firing of the ordnance.

23. (new) The fuse apparatus of claim 15, wherein the mechanical switch is a MEMS device.

24. (new) The fuse apparatus of claim 23, wherein the laser and the MEMS device are implemented as part of a single integrated device.

25. (new) The fuse apparatus of claim 24, wherein the single integrated device further comprises a lens adapted to focus the laser optical signal from the laser onto the explosive charge in the second switch configuration.

26. (new) The fuse apparatus of claim 15, wherein:

the movable element of the mechanical switch is a shutter adapted to (1) block the laser optical signal to prevent the laser optical signal from impinging on the explosive charge in the first switch configuration and (2) unblock the laser optical signal to enable the laser optical signal to impinge on the explosive charge in the second switch configuration;

the actuator is adapted to change the position of the shutter from the first switch configuration to the second configuration based on the electrical control signal from the control unit;

the laser has a controllable optical power level;

the control unit is further adapted to control the optical power level of the laser to generate either a low-power laser optical signal or a high-power laser optical signal, wherein:

the low-power laser optical signal is insufficient to ignite the explosive charge; and

the high-power laser optical signal is sufficient to ignite the explosive charge;

further comprising an optical detector positioned such that:

the optical detector receives at least a portion of the laser optical signal reflected from the movable element of the mechanical switch, if the mechanical switch is in the first switch configuration; and

the detector receives substantially no reflected laser optical signal from the movable element of the mechanical switch, if the mechanical switch is in the second switch configuration, wherein the optical detector is adapted to generate a detector signal for the control unit indicative of receipt of reflected laser optical signal;

the control unit is further adapted to control the laser to generate:

the low-power laser optical signal if the detector signal indicates receipt of the reflected laser optical signal; and

the high-power laser optical signal if the detector signal indicates non-receipt of the reflected laser optical signal.

the control unit is adapted to:

detect firing of the ordnance; and

control the configuration of the mechanical switch to change from the first configuration to the second configuration after detecting the firing of the ordnance;

further comprising at least one of (i) an accelerometer adapted to generate an acceleration signal for the control unit indicative of the firing of the ordnance and (ii) a spin sensor adapted to generate a spin signal for the control unit indicative of the firing of the ordnance;

the mechanical switch is a MEMS device;

the laser and the MEMS device are implemented as part of a single integrated device; and

the single integrated device further comprises a lens adapted to focus the laser optical signal from the laser onto the explosive charge in the second switch configuration.